



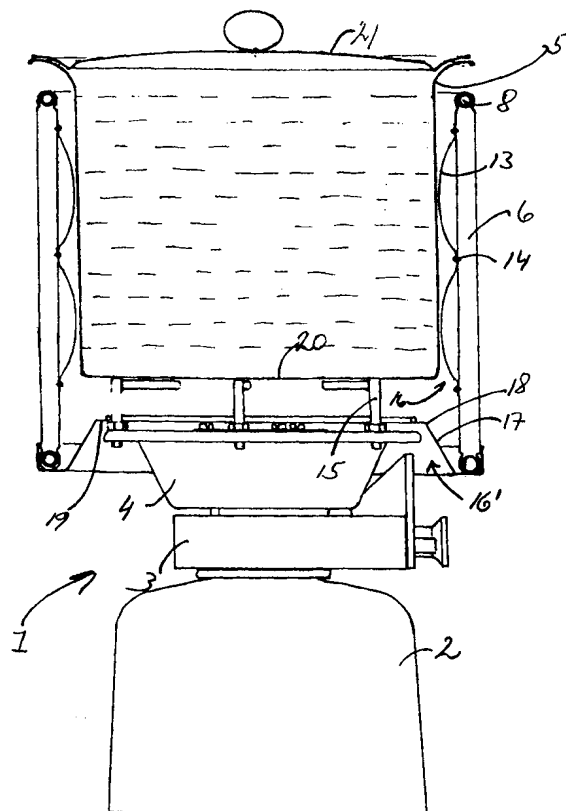
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/NO98/00384 <b>(22) International Filing Date:</b> 17 December 1998 (17.12.98)  <b>(30) Priority Data:</b> 19976026                      22 December 1997 (22.12.97)    NO 19983292                      16 July 1998 (16.07.98)        NO  <b>(71) Applicant (for all designated States except US):</b> FORSVARETS FORSKNINGSINSTITUTT [NO/NO]; N-2007 Kjeller (NO).  <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> OFTEDAL, Tor, A. [NO/NO]; Holtegt. 24, N-0355 Oslo (NO).  <b>(74) Agent:</b> HELGERUD, Jan, E.; Bryns Patentkontor A/S, P.O. Box 765 Sentrum, N-0106 Oslo (NO).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Norwegian).</i>

**(54) Title:** SHIELD FOR BURNERS, ESPECIALLY OF THE "PRIMUS" TYPE

**(57) Abstract**

A screen for a cook set, especially pressurised-fuel burners of the Primus type, wherein at one of the openings in the screen (6), along the periphery of the screen, there is provided a flange (17) in the form of a cone truncated perpendicular to the axis of the screen, and which in turn, along the line of truncation, is equipped with a circular flange (19) essentially perpendicular to the axis of the screen (6). By turning the screen (6) it will in addition be capable of serving as a case or container in which the cook set (1) may be packed.



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### Shield for burners, especially of the "Primus" type

The present invention relates to a cylindrical screen for burners, especially pressurised-fuel burners of the so-called "Primus" type.

5

Most burners of the "Primus" type are as a rule equipped with a form of screen around the burner elements which are preferably in the form of ring-type burner elements.

When these burners are used for boiling or frying, large amounts of heat will  
10 nevertheless be lost due to uncontrolled convection as there will be large wind-exposed gaps between the burner and the cooking pot or frying pan.

Various devices have been proposed to reduce this heat loss to the surroundings, for example, cooking pots with double walls or even screens having internal beads or  
15 clamps, intended for a type of mounting on the burner.

These devices have to a certain degree remedied the problem of heat loss to the surroundings, but have however been awkward to deal with, since because of their intended use they must inevitably be larger than the largest cooking pot, and since to  
20 fulfil its purpose the screen must inevitably project some way down the burner unit containing the ring-type burner element, it has been difficult to use the screen as anything other than a screen because of the in-built clamp devices.

The object of the present invention is to reduce the problem of the volume of the screen  
25 by fashioning it in such manner that it can form a component of the transport case or container in which the burner is packed.

Thus, the object of the present invention is to improve the known technology for adaptation to more extreme conditions, whilst providing a rigid and therefore more  
30 robust embodiment without forgoing the possibilities of a suitable transport case or container in which to pack the unit.

Accordingly, the present invention relates to a screen for burners, especially for pressurised-fuel burners of the "Primus" type, and this screen is characterised in that at  
35 one of the openings in the screen, along the periphery of the screen, there is provided a flange in the form of cone truncated perpendicular to the axis of the screen, which in

turn, along the line of truncation, is equipped with a circular flange essentially perpendicular to the axis of the screen.

In a second embodiment a screen is provided which is characterised by an internal base  
5 that is movable along the axis of the screen.

Centring elements are preferably provided on the inside wall of the screen for optimal centring of deep cooking pots.

10 In the second embodiment, the base that is movable along the axis of the screen is preferably attached to the inside wall with the aid of pivotally secured, flexible connection elements.

In a preferred embodiment, these elements are lengths of wire.

15

This base may be in the form of an open ring, but without departing from the scope of the invention, the ring may also encircle a fixed heat-conducting wire mesh.

The preferred embodiment of the invention is particularly suitable for especially  
20 extreme conditions with a view to channelling the heat from the ring-type burner element of the burner towards the bottom of a pot placed inside the screen without too great a loss to the surroundings.

The invention will be illustrated in more detail with reference to the enclosed drawings,  
25 wherein:

- Figure 1 shows a screen according to a preferred embodiment of the invention;
- Figure 2 shows the screen according to Figure 1, mounted on a burner of the "Primus" type and with a cooking pot placed therein;
- 30 - Figure 3 shows the screen according to Figure 1, used as a case or container for a burner of the "Primus" type;
- Figure 4 corresponds to Figure 2, but shows a screen according to a second embodiment of the invention with a movable base; and
- Figure 5 corresponds to Figure 3, but shows the second embodiment of the  
35 invention.

In Figure 1 the screen 6 is preferably made of concentric thin plate aluminium tubes 7 which in the upper and lower ends, in a suitable manner, for example, by shrinking, folding or riveting, are secured to or around support rings, for example, in the form of steel tubes. The cavity 9 between the plates in the screen may be filled with an  
5 insulating material, but in practice this has been found to be unnecessary.

Along one of the openings of the screen 6 there is secured a flange 17 in the form of a truncated cone, the tip of which points towards the interior of the screen.

10 Along the line of truncation 18 on this cone, there is turn formed a circular flange 19 which runs parallel to the periphery of the screen and is perpendicular to the axis of the screen.

The aperture of the flange 19 is preferably such that it just encloses a circle defined by  
15 the supporting lugs 15 of the burner 4 as will be described in more detail with reference to Figure 2.

Centring elements 13, for example, in the form of leaf springs, spaced at 120° or preferably 90° are provided on the inside wall of the screen 6 for centring a cooking pot  
20 5.

Figure 2 shows the screen 6 as described in Figure 1, mounted on a cook set 1 including fuel tank 2, control and distribution block 3 and burner unit 4, here shown with a cooking pot 5 with lid 21 placed therein.

25 This cook set 1 including fuel tank 2, distribution block 3 and burner unit 4 is of a conventional type and will not be described in more detail.

Pivotal supporting lugs 15 of a conventional type are preferably arranged in a  
30 conventional manner around the burner unit 4.

As mentioned in the description of Figure 1, the aperture of the flange 19 is preferably only slightly larger than the circular aperture defined by the burner 4 lugs 15.

35 Therefore when the screen is placed on the cooking set 1, the aperture of the flange 19 guides the mounting of the screen so that it is centred.

Owing to the conical and closed form of the flange 17, supplementary combustion air will be guided into the cooking area on the underside of the conical flange 17 and the essentially horizontal (perpendicular to the axis of the screen) flange 19.

- 5 This results in an improved combustion in the area immediately above the ring-type burner element 4 with maximum output towards the bottom 20 of the inserted cooking pot 5.

Hot exhaust gases will thus be forced up along the space between the inside wall of the  
10 screen 6 and the cooking pot 5 without the supply of any cooling false air from below, which in turn ensures maximum heat output on combustion.

Figure 3 shows the possibilities of using the screen 6 as a transport case for the cook set  
1.

15

In this case the whole screen is turned and in the same way as when ready for use and because the aperture of the flange 19 is only slightly larger than the circular aperture defined by the lugs 15 of the burner 4, the aperture of the flange 19 will also guide the turned mounting of the screen so that this is centred when passed over the burner.

20

Figure 4 shows an alternative embodiment of the screen 6. In this case the screen 6 is equipped with a base 10 which is mounted in the inner wall of the screen in such manner that it can be moved in the longitudinal direction of the screen 6, parallel to its axis.

25

The ring 10 is suspended from the inside wall of the screen 6 by means of flexible elements 11, preferably in the form of lengths of wire.

These lengths 11 are, for example, equipped with shrunk-on T-pieces for pivotal  
30 support 12 in both ends, thereby ensuring a free movement parallel to the longitudinal axis of the screen between an upper position as shown in Fig. 4 and a lower transport position as shown in Figure 5.

The mounting on the inside wall of the screen 6 may, for example, take place in an eye  
35 12 on a bracket 13, wherein the bracket is secured to the wall with rivets 14 and wherein the upper part of the bracket is in the form of a spring band 13, which, in use, as shown in Figure 4 constitute centring elements for the cooking pot 5.

In the other end, the fastening members 11 may be pivotally secured to the ring 10 in any known way whatsoever, this mode of attachment per se not constituting any part of the invention.

5

In use, the cook set 1 will be set up and then the lugs 15 of the burner 4 will be folded out in the usual manner.

The screen 6 is then placed over the burner unit and the flange 19 or ring 10, as the case  
10 may be, will come to rest against the lugs 15 so that the screen 6 will hang in place in such manner that it constitutes a skirt around the burner part 4.

When the cooking pot 5 is placed on the horizontal flange 19 or on the ring 10, where the pot 5 is centred with the aid of the bands 13, a maximum utilisation of the heat from  
15 the burner will be ensured since all combustion gas and indrawn, heated air is forced to flow between the screen 6 and the wall of the cooking pot as indicated by arrow 16.

In the embodiment shown in particular in Figure 2, external air is in addition forced to flow up along the underside of the conical flange 17 as indicated by the arrow 16',  
20 which provides a further improvement in the heating economics.

To improve the heat utilisation factor, it is also an advantage that the outer wall of the cooking pot and the wall of the screen 6 facing the cooking pot are sooted or blackened in some other manner.

25

To be able to utilise the heat in the gases from the burner to the maximum, the wall of the screen 6 facing the pot 5 is black whilst all other walls are polished.

Figures 3 and 5 show the possibilities of using the screen 6 as a transport case for the  
30 cook set 1.

The lugs 15 are folded in, and then the screen 6 is passed over the cook set 1 (Figure 3) or the cook set 1 is put into the screen (Figure 5), so that either the screen 6 hangs on the set (Figure 3) or the set 1 stands in the movable base (Figure 5).

35

In the last-mentioned case it is an advantage that the position of the point of rotation 12 on the screen on the one hand and the length of the connection element 11 on the other

hand should be adapted so that the lower support ring 8 for the screen and the base ring 10 in its lower position are at about the same height.

Of course, the length of the conical flange 17 and the length of the lugs 15 are likewise  
5 adapted to one another as is indicated in Figure 3.

For transport, the unit may be equipped with a transport lid 22 as indicated in Figure 3, which advantageously may also be used as a frying pan.

10 The inventive screen allows the screen to be utilised to the maximum both as protection against the wind to reduce heat loss to the surroundings and to be able to make use of the volume of the screen when the cook set is to be transported by making it into a transport case.

15 Another of the advantages obtained with the inventive screen, is that used without a cooking pot, it allows an easier lighting of the burner under difficult wind conditions.

Furthermore, the screen allows cooking pots and frying pans to be changed with ease, which was not the case with known solutions of a similar kind. Lastly, it should be  
20 pointed out that the burner with screen has a low signature, that is to say that it has a low sound and especially a low light level.

The invention therefore represents a major advance as regards fuel and heat utilisation with cook sets and pots of this type which are in fact essentially intended for field use,  
25 for example, by the armed forces, rescue teams and the like and in advanced leisure use.

P a t e n t   c l a i m s

1.

5 A screen (6) for a cook set (1), especially pressurised-fuel burners of the Primus type, characterised in that at one of the openings in the screen (6), along the periphery of the screen, there is provided a flange (17) in the form of a cone truncated perpendicular to the axis of the screen, and which in turn, along the line of truncation, is equipped with a circular flange (19) essentially perpendicular to the axis of the screen (6).

10 2.

A screen according to claim 1, characterised in that the flange (17) has the form of a plurality of pivotally fixed (12) connection elements (11) which support a base (10) in the form of a ring or flange.

15 3.

A screen according to claim 2, characterised in that the elements (11) are lengths of wire.

4.

20 A screen according to claim 2 or 3, characterised in that the flange or ring (10) encircles a fixed wire cloth or mesh.

5.

25 A screen according to any one of the preceding claims, characterised in that internally it is equipped with centring elements (13).

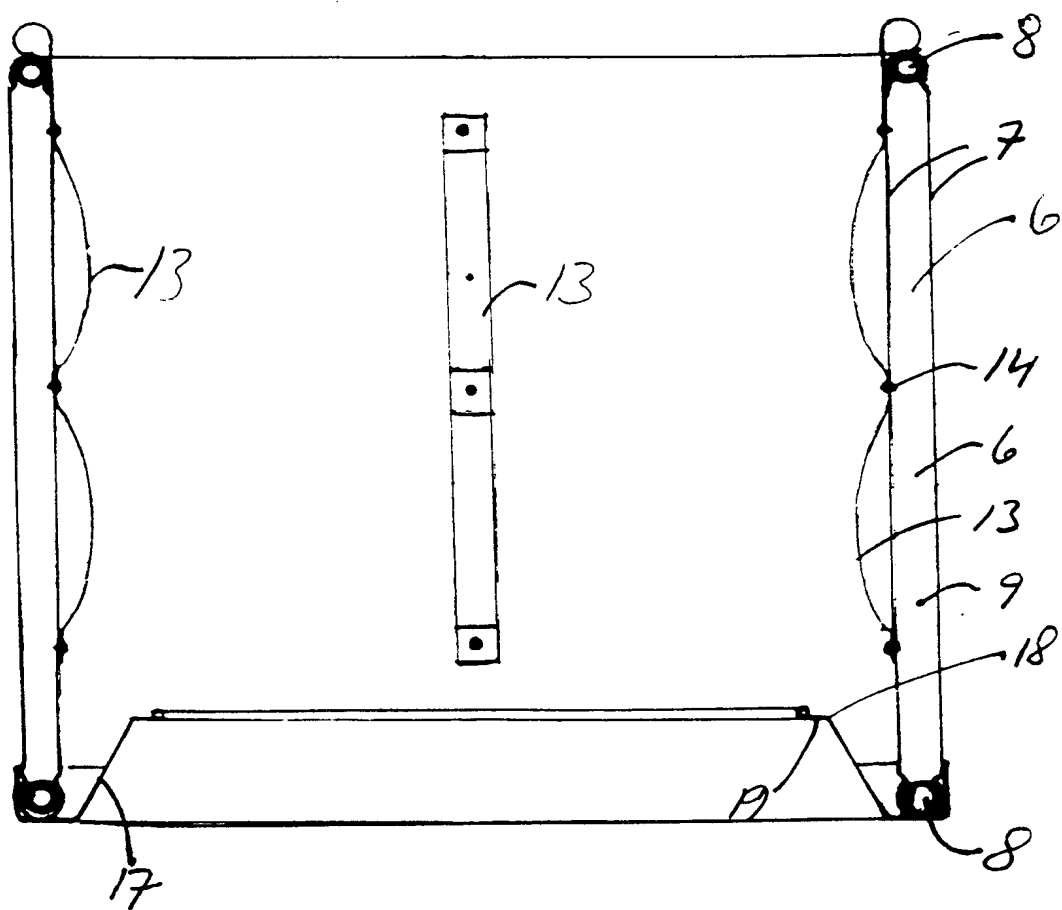
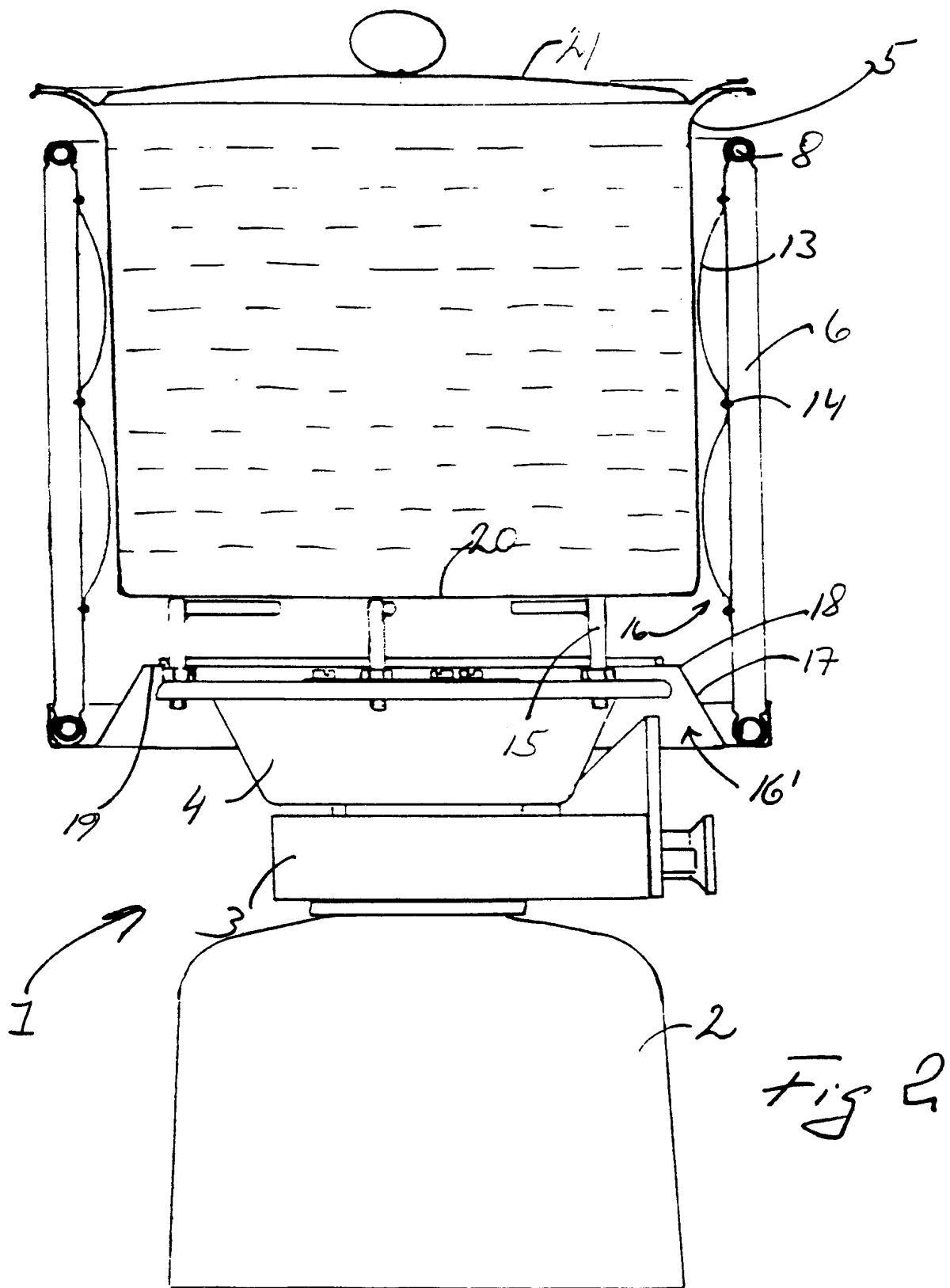
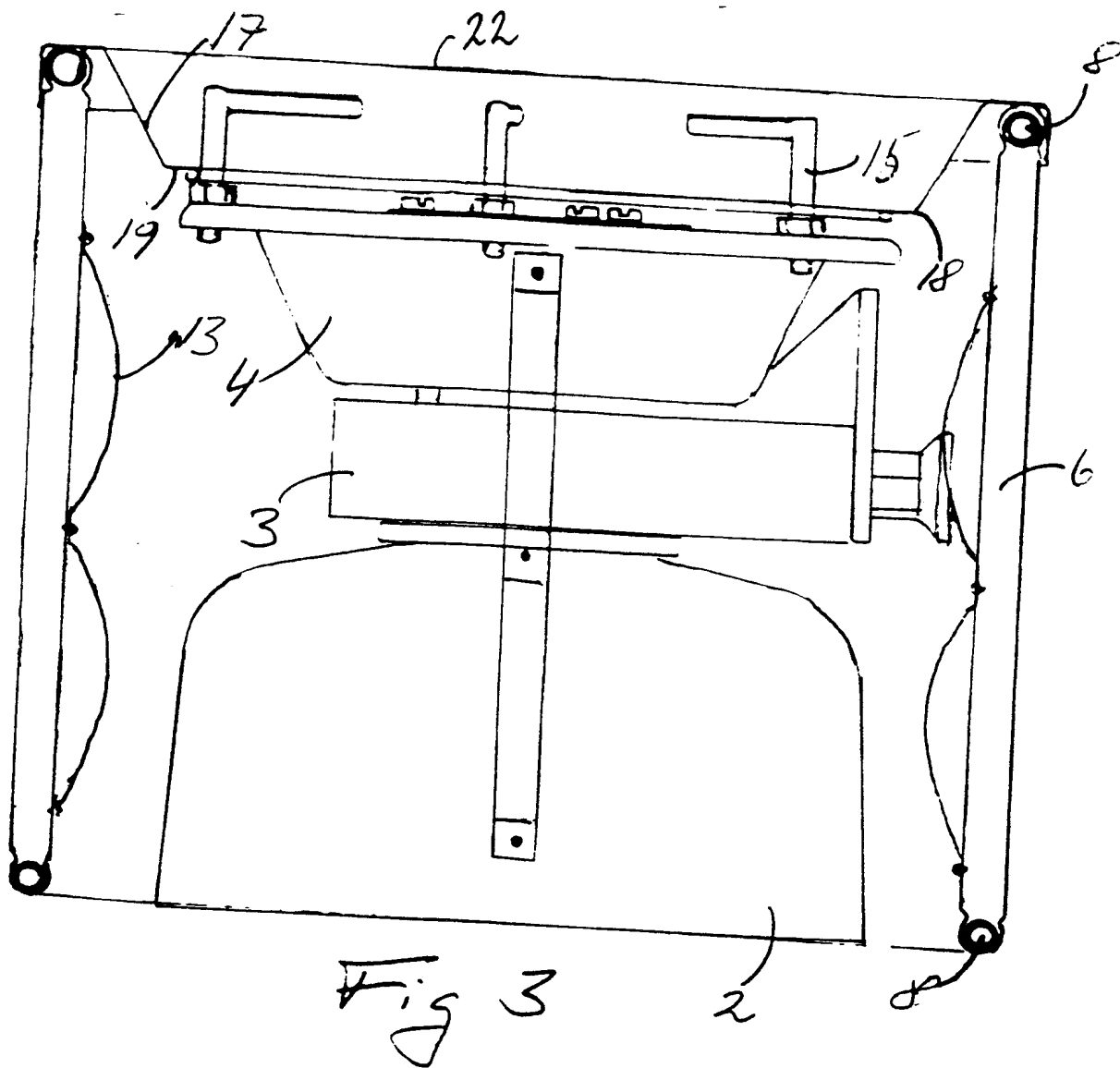
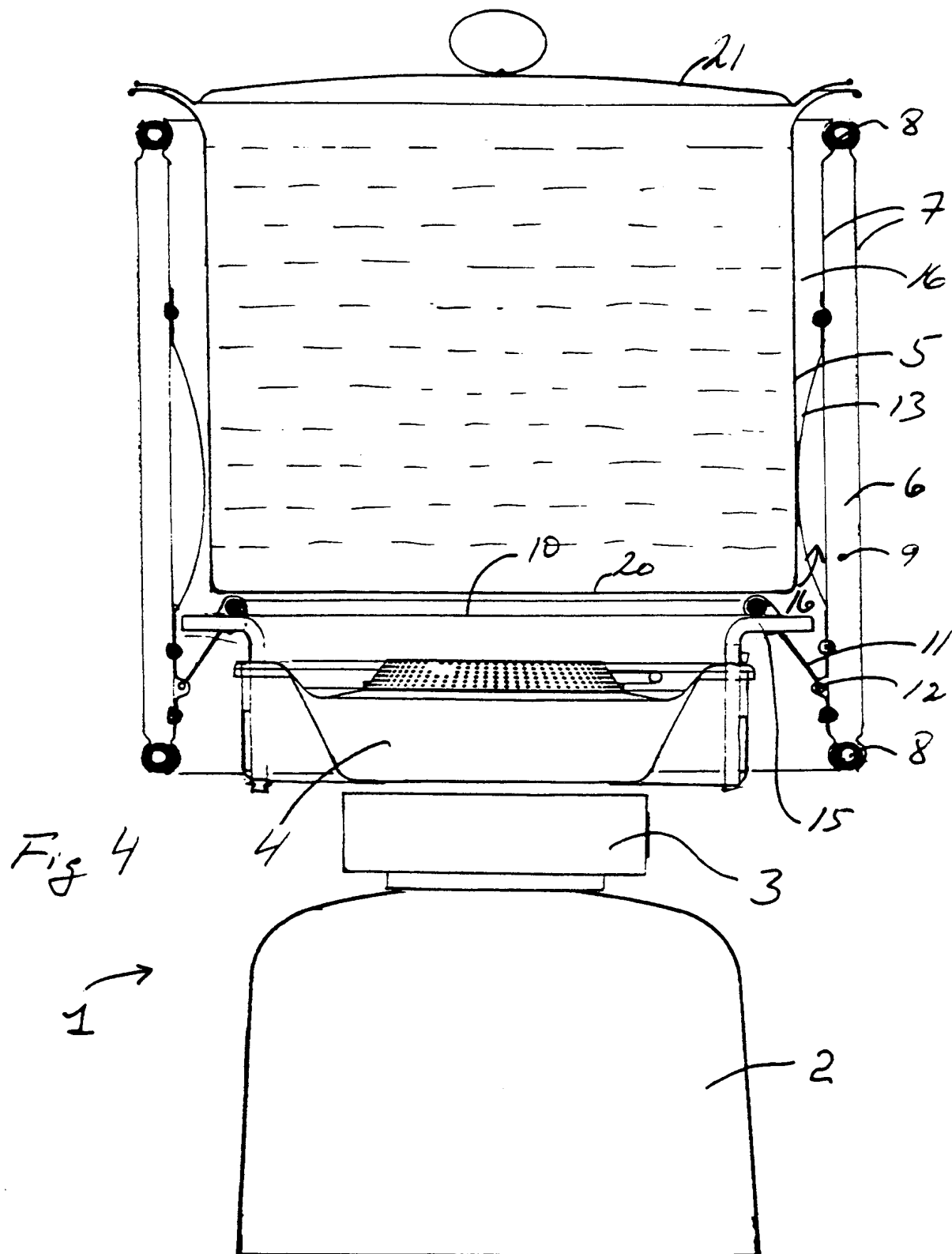
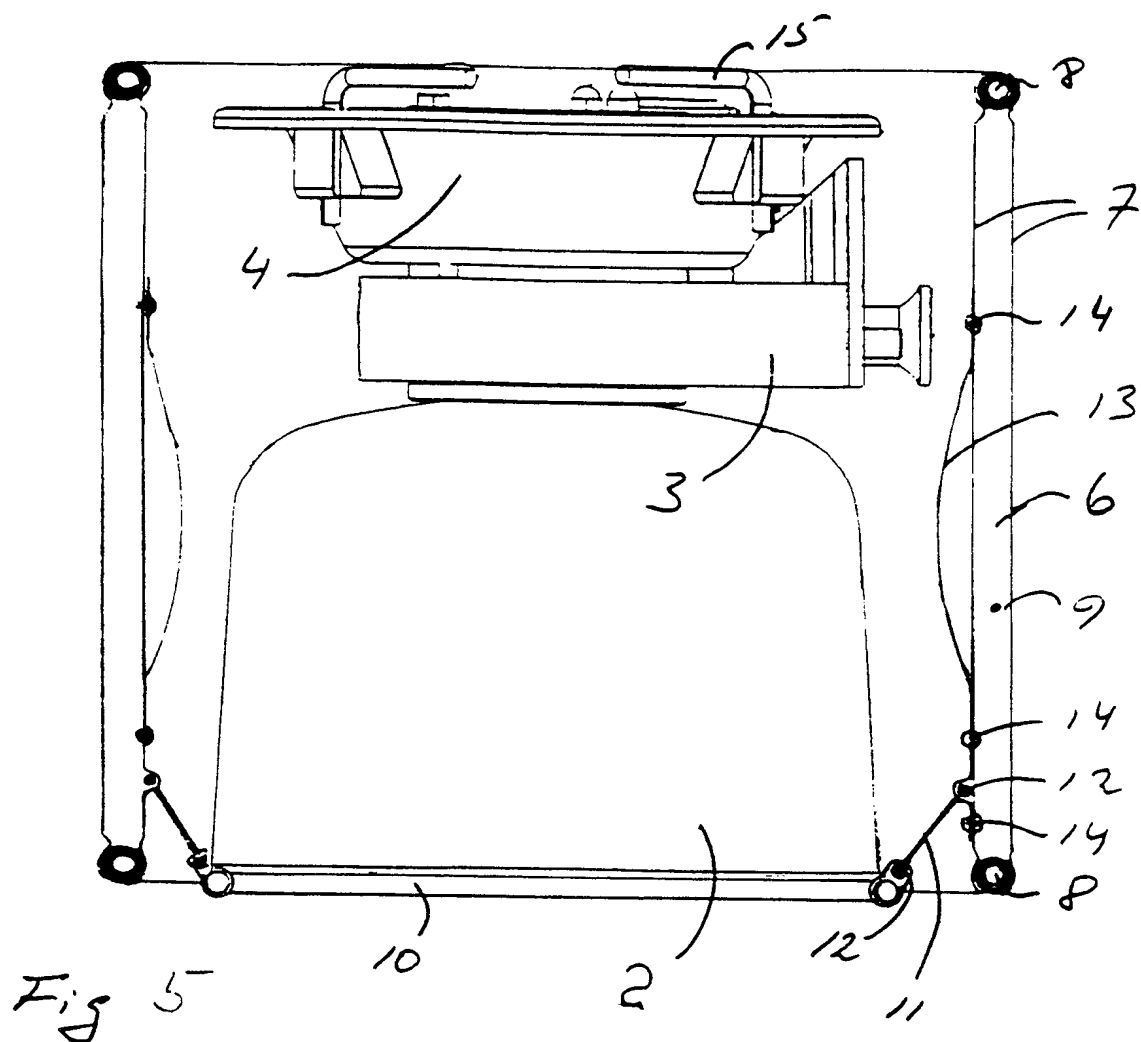


Fig 1









# INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 98/00384

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC6: A47J 33/00, A47J 36/26**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC6: A47J**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 4127077 A1 (MARSTELLER & KILLMANN GMBH & CO KG), 11 March 1993 (11.03.93), figures 1-3, claims 1-6  --	1-2
A	GB 1457626 A (PRIMUS-SIEVERT AB), 8 December 1976 (08.12.76), figures 1-2, claims 1-2  --	1-5
A	WO 94018504 A1 (RISODA PTY. LTD), 18 August 1994 (18.08.94), figures 1-7, claims 1-16  --	1-5
A	DE 3516293 A1 (MARSTELLER & KILLMANN GMBH & CO KG), 13 November 1986 (13.11.86), figures 1-3, claims 1-6  -- -----	1-5

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

**15 April 1999**

Date of mailing of the international search report

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# INTERNATIONAL SEARCH REPORT

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Patent document cited in search report			Publication date	Patent family member(s)	Publication date
DE	4127077	A1	11/03/93	NONE	
GB	1457626	A	08/12/76	NONE	
WO	94018504	A1	18/08/94	NONE	
DE	3516293	A1	13/11/86	NONE	

**PUB-NO:** WO009932022A1  
**DOCUMENT-IDENTIFIER:** WO 9932022 A1  
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**PUBN-DATE:** July 1, 1999

**INVENTOR-INFORMATION:**

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**ASSIGNEE-INFORMATION:**

NAME	COUNTRY
FORSVARETS FORSKNINGS	NO
OFTEDAL TOR A	NO

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**APPL-DATE:** December 17, 1998

**PRIORITY-DATA:** NO00976026A (December 22, 1997) ,  
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**EUR-CL (EPC):** A47J036/26 , A47J036/36

**ABSTRACT:**

CHG DATE=20031203 STATUS=O>A screen for a cook set, especially  
pressurised-fuel burners of the Primus type, wherein at one of the openings

in the screen (6), along the periphery of the screen, there is provided a flange (17) in the form of a cone truncated perpendicular to the axis of the screen, and which in turn, along the line of truncation, is equipped with a circular flange (19) essentially perpendicular to the axis of the screen (6). By turning the screen (6) it will in addition be capable of serving as a case or container in which the cook set (1) may be packed.